



**2004
PRIVATE
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MARRIOTT WARDMAN
PARK HOTEL

Improving Communications in the 800 MHz Band

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Background

A History of Interference in the 800 MHz band

- Since 1999, the Commission has received reports of interference to public safety communications systems caused by Commercial Mobile Radio Service (CMRS) providers operating systems in close proximity to mobile and portable radios.
- In 2000, representatives of the public safety and CMRS communities adopted “Best Practices,” a series of voluntary technical measures to prevent or reduce interference.



Background

A Call for Commission Action

- Despite “Best Practices,” reports of interference to public safety systems have increased in recent years, demonstrating that voluntary measures are insufficient and emphasizing the need for Commission relief.
- Absent Commission action, growing interference will impede the reliability of critical public safety communications systems.



The 800 MHz Solution

Essential Objectives of the Commission's Plan

- Resolution of the problem of interference to public safety radio systems.
- Equitable treatment of all affected spectrum licensees with minimal disruption to both spectrum users and the public.
- Administration of the spectrum for the public good, exercising sound principles of spectrum management.
- The provision of additional 800 MHz spectrum that can be quickly accessed by public safety agencies and rapidly integrated into their existing systems.



The 800 MHz Solution

800 MHz Report and Order

- The most effective solution to resolve interference is a plan comprised of both short-term and long-term components:
 - **Short Term:**
In the short term, the Commission will implement interference abatement measures, including “Enhanced Best Practices.”
 - **Long Term:**
In the long term, the Commission will reconfigure the 800 MHz band, thereby addressing the root cause of interference.



THE 800 MHz INTERFERENCE SOLUTION, PART I

INTERFERENCE ABATEMENT

Short-term, much-needed relief from individual interference events



Interference Abatement

Key Terms

- **Non-cellular 800 MHz licensees:**
 - Public safety, critical infrastructure industry, Business and Industrial/Land Transportation (B/ILT) licensees, and non-cellular SMR licensees.
- **Critical Infrastructure Industry (CII) licensees:**
 - Private, internal radio services used by State and local governments and non-government entities, and including emergency road services provided by not-for-profit organizations, that (1) are used to protect the safety of life, health, or property; and (2) are not made commercially available to the public.
 - Examples include 800 MHz systems that provide private internal radio services used by utilities, railroads, pipelines, volunteer fire departments, private ambulances, and metropolitan transit systems.



Interference Abatement

Entitlement to Interference Protection

- Adoption of a new objective technical standard for determining whether a public safety or other non-cellular 800 MHz licensee is entitled to interference protection.
- “Unacceptable interference” is defined, for purposes of this proceeding, as interference that occurs in an area where the public safety or other 800 MHz system provides an adequate threshold signal level.



Interference Abatement

Rules and Procedures

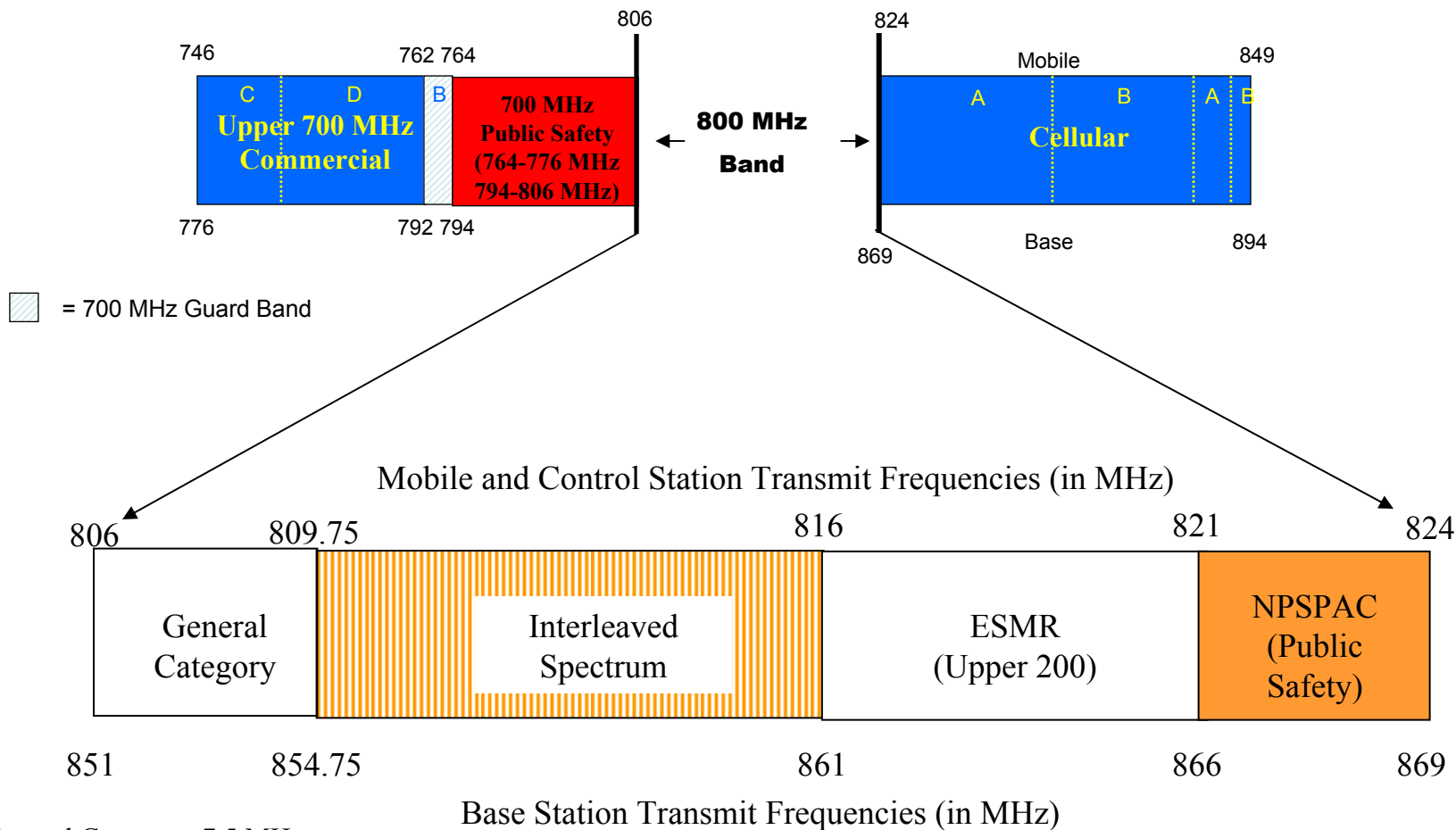
- **Prior Notification:** Upon request, public safety/critical infrastructure industry and ESMR/cellular 800 MHz licensees have reciprocal obligations to inform each other of changes to their systems which could change the interference environment. (Prior notice information to non-public safety or non-CII licensees is not required, although the Commission encourages providing such information upon request.)
- **Responsibility for Abating Interference:** Any ESMR or cellular telephone licensee that causes, or contributes to, unacceptable interference to a non-cellular licensee is responsible for abating it promptly at its own expense.
- **Interference Resolution Procedures:** Licensees must comply with standardized procedures for reporting 800 MHz interference, identifying its source, and implementing a solution.



THE 800 MHz INTERFERENCE SOLUTION, PART II

BAND RECONFIGURATION

Long-term, sustainable solution to the problem of 800 MHz interference



General Category - 7.5 MHz

150 Channels

Licensed by EA Blocks of 25 channels (SMR)

Some Incumbent Operators Remain

ESMR/Upper 200 – 10 MHz

200 Channels

Licensed by EA

Non EA incumbents are currently undergoing mandatory relocation

NPSPAC - 6 MHz

225 Channels @ 12.5 kHz spacing

5 Channels @ 25 kHz spacing

5 Mutual Aid Channels

Interleaved Spectrum - 12.5 MHz

250 Channels

80 SMR Channels

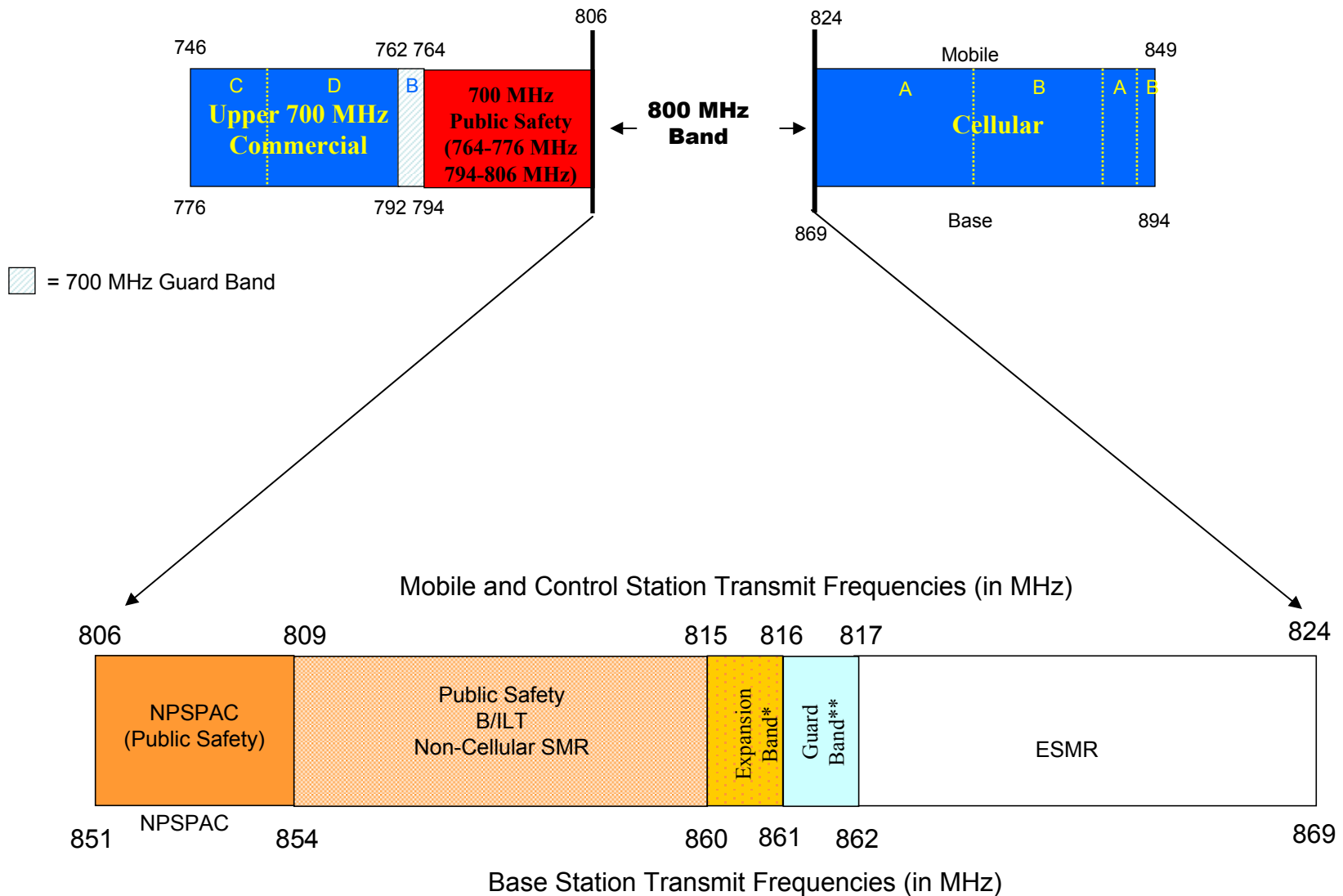
(Licensed by EA, Some Incumbent Operators Remain)

70 Public Safety Channels

50 Business Channels

50 Industrial Land Transportation Channels

PRE-RECONFIGURATION BAND PLAN



*No public safety system will be required to remain in or relocate to the Expansion Band; although they may do so if they choose.
 **No public safety or CII licensee may be involuntarily relocated to occupy the Guard Band.

POST-RECONFIGURATION BAND PLAN



Band Reconfiguration

Non-Cellular 800 MHz Band Specifics

- **NPSPAC:**
 - Only NPSPAC systems eligible
- **Interleaved:**
 - Public safety, B/ILT, SMR channels interleaved
- **Expansion Band:**
 - B/ILT and SMR channels interleaved
 - No public safety system will be required to remain in or relocate to the Expansion Band
 - May include non-Nextel ESMR systems
- **Guard Band:**
 - Any licensee operating below 817 MHz/862 MHz may elect to relocate to the Guard Band
 - No 800 MHz licensee may be involuntarily relocated to the Guard Band
 - May include non-Nextel ESMR systems



Band Reconfiguration

Full Funding of Relocation Costs

- Nextel must pay for 800 MHz incumbent relocation costs and must secure a letter of credit in the amount of \$2.5 billion to ensure adequate funding of 800 MHz reconfiguration.
- All relocating licensees shall be relocated to comparable facilities.
 - *Comparable facilities are those that will provide the same level of service as the incumbent's existing facilities, with transition to the new facilities as transparent to the possible end user.*
- All channel changes necessary to implement band reconfiguration will be paid by Nextel.



Band Reconfiguration

Transition Administrator

- To ensure a smooth transition to the new 800 MHz band plan, the relocation process will be managed by an independent Transition Administrator.
- The independent TA will:
 - ✓ oversee the administrative and financial aspects of the band reconfiguration process
 - ✓ provide accountability
 - ✓ ensure that reconfiguration is achieved with minimal disruption to licensees, particularly public safety entities
 - ✓ authorize disbursement of funds for band reconfiguration based on requests for payment by affected parties
 - ✓ resolve relocation disputes.
- TA decisions will be subject to *de novo* review by the Commission.



Band Reconfiguration

Timeframe

- The Transition Administrator must be selected by October 10, 2004.
- Within 30 days of the Transition Administrator's selection, the TA will provide the Commission with a schedule detailing when band reconfiguration shall commence for each NPSPAC Region.
- 30 days before the start date for reconfiguration of a Region, the Commission will release a Public Notice initiating voluntary negotiations between Nextel and all relocating incumbents.
 - 3-month voluntary negotiation period
 - 3-month mandatory negotiation period
 - Nextel and relocating incumbents may negotiate directly or may communicate through the Transition Administrator.
- Once the "rebanding clock" is started, band reconfiguration must be completed within 36 months.



Band Reconfiguration

Step-by-Step Relocation Process

- TA notifies a licensee of the need to relocate.
- Cost of relocation is estimated and submitted to the Transition Administrator or directly to Nextel (licensee will be paid for the cost of producing the estimate).
- Relocation funds, backed by the \$2.5 billion Letter of Credit, are disbursed to the entity contracted to reconfigure the licensee's system.
- Any disputes are referred to the Transition Administrator.
- Licensee begins operation on the new channel.



Band Reconfiguration

True-Up Process

- To ensure that Nextel is treated equitably for its spectral and financial contributions, Nextel will obtain the right to operate on two five-MHz blocks at 1.9 GHz, subject to certain conditions.
- The Commission will credit Nextel for the value of the spectrum rights that Nextel has relinquished and its actual costs incurred in 800 MHz band reconfiguration and clearing the 1.9 GHz band.
- To the extent that these combined credits total less than the determined value of the 1.9 GHz spectrum rights, Nextel will make a payment to the United States Treasury at the conclusion of the relocation process equal to the difference.



Band Reconfiguration

Summary of Benefits to Non-Cellular Licensees

- **An interference standard**
 - Unacceptable interference defined as ratios of desired signal to undesired signal
 - Non-cellular licensees receive protection from unacceptable interference for desired signals as low as -104 dBm (for mobile) and -101 dBm (for portable)
- **Standard procedures for interference resolution**
 - Non-cellular licensees report interference to a single E-mail address or Website.
 - ESMR and Cellular Telephone licensees must respond to interference complaints within 48 hours of receipt (24 for public safety/CII)
- **No more interleaving with cellular architecture systems**
 - Band plan separates “high density” cellular systems from non-cellular systems
 - Separation should reduce instances of unacceptable interference



Conclusion

For More Information:

- WT Docket 02-55
- Text of the 800 MHz Decision:
http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-168A1.pdf
(pdf format)
http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-168A1.doc
(Word format)
- FCC Wireless Telecommunications Bureau:
<http://wireless.fcc.gov/>
<http://wireless.fcc.gov/publicsafety/>
<http://wireless.fcc.gov/publicsafety/800MHz/bandinterference.html>



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